Capital Music – Personal Expression with a Public Display of Song Choice

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ABSTRACT
Using information and communication technology devices in public urban places can help to create a personalised space. Looking at a mobile phone screen or listening to music on an MP3 player is a common practice avoiding direct contact with others e.g. whilst using public transport. However, such devices can also be utilised to explore how to build new meaningful connections with the urban space and the collocated people within. We present findings of work-in-progress on Capital Music, a mobile application enabling urban dwellers to listen to music songs as usual, but also allowing them to announce song titles and discover songs currently being listened to by other people in the vicinity. We study the ways that this tool can change or even enhance people's experience of public urban spaces. Our first user study also found changes in choosing different songs. Anonymous social interactions based on users' music selection are implemented in the first iteration of the prototype that we studied.

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Context Sharing, Music, Public Places, Urban Informatics

ACM Classification Keywords
H5.2 Information interfaces and presentation: User Interfaces.

INTRODUCTION
Life in the city is busy. We travel from one place to another and meet people at different locations for social, business, or entertainment purposes. Thereby, city dwellers cross streets, places, buildings, and other public and anonymous urban places using cars, public transport, or even just walk to their destination usually accompanied by Information and Communication Technology (ICT) devices. Urban dwellers use ICT devices such as mobile phones or music players as "cocooning" items in public urban places to create their own personal space and therefore avoiding direct contact with surrounding strangers [5]. Even without a signal, such as in underground railways, people tend to use their devices for different purposes such as playing games, listening to music, or deleting old text messages [1]. While travelling to work, during idle time, or on the way home, people listen to songs to get into the desired mood, create a soundtrack for an activity, or just relax after a hard day at work.

Human beings are naturally curious about their surrounding social environment as well as the urban space and the collocated people within. Street cafés arrange their chairs and tables in a way to enable better observations of passing people and the actions which take place on the streets. On the other hand, recent web services such as Facebook.com and Twitter.com are highly successful, because they enable users to express thoughts and activities on their personal profile and in turn browse profiles of other people in their social circle for comparison, social awareness, and fun.

This study sets out to explore if the sharing of "lightweight information" (such as song choice) in the physical space, mediated through location-aware ICT devices, can enhance the experience of people in public urban places. We explore if the collected data can be used to infer on how a location can affect the mood of its visitors, or on how its visitors can influence each other's music selection. Instead of secluding oneself from the surrounding environment, personal mobile devices could then be used to connect – or simply associate – with other people in space utilising music as a common ground of interaction. We would like to support the process of "*finding sameness in a sea of otherness and connecting like with like*" [2].

Our study seeks to foster people's connection to place by visualising real-time context data of collocated people and providing an opportunity for digitally mediated social user interaction based on this non-privacy-sensitive information. According to Pedersen & Valgårda, Urban Social Technology – which is defined as IT used in urban environments for a social purpose that goes beyond phone calls and text messages – should align with current social practices and behaviour rather than creating new ones [7]. Therefore, Capital Music follows a simple approach to

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enhance the experience of people in public places while listening and interacting with their devices. Capital Music enables urban dwellers to listen to their songs as usual, but the application furthermore visualises the songs currently played in the user's vicinity in a "mobile music cloud." Additionally, users are offered anonymous and private means for social interaction based on currently played songs of collocated people.

The remainder of this paper describes the design process of Capital Music including our first user study. The analysis of our preliminary findings informs the first prototype. An outline of future research work concludes the paper.

DESIGN PROCESS

The design and development of Capital Music has been influenced by a "*quick and dirty*" ethnographic approach [4] and a paper based evaluation of the application concept.

Site Observation

Our university offers a free shuttle bus for staff and students to travel between two campus locations. The shuttle busses leave every 10 minutes during the semester and the travel time is around 15 minutes. To gain a general picture of how people spend their time on the bus, what kind of devices they use, and if social interaction occurs, we observed 63 people in 4 busses over 2 days using the bus service provided by the university.

This basic site observation revealed that university staff and students either listen to music on mobile phones or music players using headphones, interact with their mobile phones doing tasks such as writing text messages or playing games, read some kind of newspaper or textbooks, or just stare out of the window if they don't interact or use any devices. Furthermore, most of the observed people switched their focus from their device they are engaged with to the bus window back and forth. We saw that only as the bus stops and people get off their seats, do people for the first time look around, explore their environment and sometimes discover other people on the bus.

Some of the music listeners sub-communicated their mood through moving their feet or hands according to the rhythm of their currently played song. Others listened to music that loud that collocated people could at least guess the genre. Some of the students openly displayed their music taste through their personal appearance and choice of clothing.

Social user interaction mainly took place when people travel in groups. We could observe only one case in which two passengers interacted with each other who didn't know each other. One student carried a large architectural model, which another student used as an icebreaker to start a conversation. He commented on the model, but the other student stalled the conversation with a single word response.

Mobile music listeners are an attractive user group for this study, because *"music also plays a role in our social lives – talking about, displaying, swapping and sharing music are all ways through which we express who we are and interact with others"* [6]. Furthermore, research on music psychology has shown that "*the social functions of music are manifested in the […] management of self-identity, interpersonal relationships, and mood in everyday life*" [3]. With Capital Music, we try to address the question, how and to what extend the collective visualisation of songs currently played in a user's vicinity, can digitally augment the public space with lightweight social data, and how this changes people's social experience of public spaces.

Initial User Study

We conducted a first user study to test the concept of Capital Music and the sharing of currently played songs with unknown collocated urban dwellers. To inform the design of the application we conducted an experiment with 6 participants, 5 university students and 1 university staff member aged between 23 and 36, 5 male and 1 female.

Figure 1: Participants sharing their currently played song

Participants brought their own music player containing their personal music library to the study. We then introduced the scenario that they are travelling with the shuttle bus to the university's other campus. Participants got the task to select a song from their music library and listen to it with their headphones as they usually would when they are using the bus. After two minutes the participants were given post-it notes and pens and were instructed by a sign placed in the middle of the desk to write down the artist and title of the currently played song without showing others. We collected the notes, and stuck them in random order on a whiteboard visible for everyone (see Figure 1). After all participants reviewed the whiteboard display, we asked them to select another song and write it down. These notes were stuck on top of the previous ones. We conducted another round of song selection with anonymously announcing song choices and then conducted a group discussion with semi-structured interviews.

Participants said that their first song selection was either based on mood, musical preferences, or they just continued the last played song in their music playlist. We asked them how they felt when their first song selection was publicly

displayed on the whiteboard without prior knowledge while selecting the song. One participant summarised it as

"You do feel like oh my music is up there. What's going on maybe I should chose a different song. [laughs] What are all those people thinking about my song."

We then wanted to know if and how the fact that other people could see what they are listening to influenced their second and third song selection. Three participants said, they simply played the songs they like. The other participants explained that they wanted to select a good song or a song they can recommend to others. One participant mentioned:

"It didn't really influence me. It did a little bit. I think the third time it did because […] I can share my music with these other people. Maybe something they haven't heard. So the third song was something they might not have heard before so I put it up there [whiteboard] so we can see it."

The participants also discussed that the title of a song would influence their song selection when sharing with others, because they assumed that someone else who doesn't know that particular song would judge their music choice based on the available textual information. A graphical representation of music in terms of album artworks has not been considered during this paper trial. However, the answers show how the participants felt more responsible about the music selection they share with collocated people.

We asked the study participants if they would feel comfortable sharing their currently played song with unknown collocated people. Two people didn't feel comfortable enough to share, because they are not used to such an approach or don't feel comfortable in general interacting with complete strangers. The remaining study participants were keen to share, as long as it is a song they feel is appropriate to share. Two participants from overseas mentioned that they would not share music from their home country as they feel that would be inappropriate in a different cultural context. Thereby they expressed interest that they would like to decide which song they share and which not. Additionally one participant mentioned:

"I think it would be fun trying to work out who's listening to what."

Furthermore we asked if they would like to comment on song selections of unknown collocated people if they could do that in an anonymous way without revealing who they are. Surprisingly, the person who didn't feel comfortable about sharing, because he was not used to it, said he would comment on song selections if the artist is not that well known. Other participants mentioned that they would send "I like" messages such as those on Facebook. Asked how he would feel if he received a "Like" message, one participant said he wanted to talk to that person if he listened to a less well known artist. Other participants mentioned that they would like to extend the song choice sharing to social networking sites:

"Yeah 10 people liked my song while I was on the bus. That's cool. I mean I would share it that way."

At this stage of the discussion we presented the concept of Capital Music. Participants concordantly acknowledged that Capital Music would be a useful and fun application to enhance their enjoyment of bus rides.

"It's a nice interaction which has been added to it [listening to music]. And a lot of people listen to music today and the portability of such music devices and taking it to a next level and creating a social network around it about what you listening to is kind of nice."

"I'd like to be able to listen to a section of a song because I think it is something really nice about listening to something at the same time as someone else."

After we introduced the Capital Music concept, we asked the participants if they would purposefully select certain songs in order to showcase their music taste in public and thus express parts of their identity. Participants mentioned that their music selection would be based on the received feedback from other application users. One participant summarised it as follows:

"I think we all want to share the most popular song that most people in the bus would like."

We asked if there was an occasion where they would like to reveal parts of their identity while interacting with Capital Music. Participants confirmed that they would like to reveal e.g., their email address or a photo, only to a particular person, if they had an ongoing interaction based on their music. However, one participant also mentioned:

"I think I wouldn't. The beauty lies in the anonymity."

The paper-based evaluation revealed that participants are more aware of their own music selection in terms of appropriateness of sharing, recommendations for others, and popularity to receive social reactions from collocated people.

DESIGNING CAPITAL MUSIC

The outcomes of the initial user studies influenced the design and development of the first prototype iteration of Capital Music. The application has been developed for iPhone, iPad and iPod Touch devices using the Apple iPhone SDK. For the visualisation of songs currently played in the user's vicinity, we applied a visual approach displaying a mosaic of album cover artworks as shown in Figure 2 (a). We assume that the visualisation of album cover artworks instead of textual information stimulates interaction with the application and the discovery of new music. Additionally considering the outcomes of the initial evaluation, we believe that adding a visual component to the textual metadata allows users to get a better glimpse about an unknown song. Application users can tap on an artwork in the main screen to get more information about this song as shown in Figure 2 (b). This detailed view also

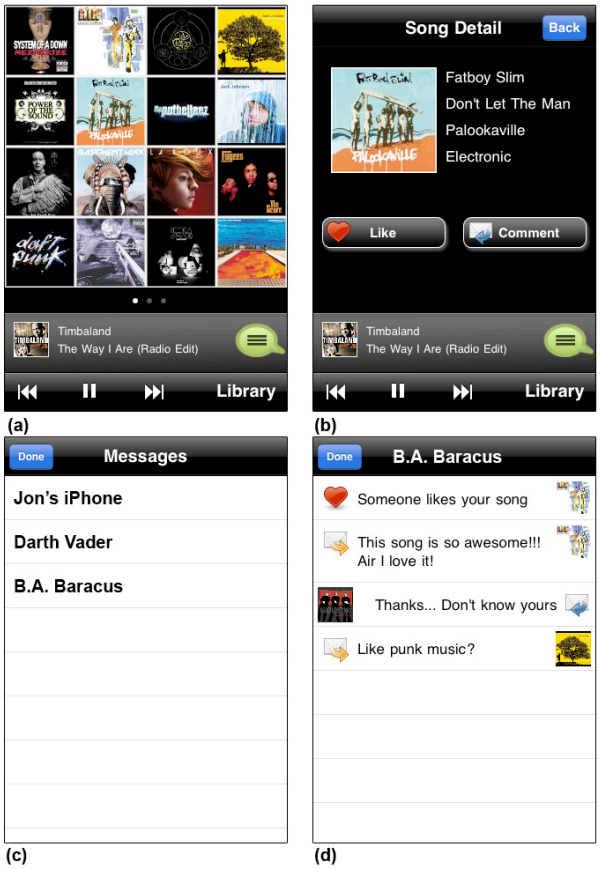

Figure 2: Capital Music user interface.

allows users to send a "Like" message or a text message to the respective collocated person. Capital Music enables social user interaction in a completely anonymous way. The application does not require any user subscriptions or profiles. Figure 2 (c) shows the messaging screen after having pressed the green speech bubble located on the bottom right-hand corner of the application's main screen.

To group interactions visualised in the messages view, Capital Music utilises the device name assigned by the owner. However, this could breach users' privacy beyond what they volunteer to share, or make them feel uncomfortable. Therefore a possibility to specify a nickname has been given. If messages have been exchanged between two users, as shown in Figure 2 (d) the specific album artwork is visualised next to the message on which the interaction was based on.

OUTLOOK

Capital Music has been designed as an application to enhance the experience of public urban places. The initial paper based evaluation confirmed that such an approach can change the social experience of a bus trip and influenced the first iteration of Capital Music.

Whilst still under development, setting up a real world situation to test the prototype system is difficult, because the number of study participants for an authentic scenario exceeds a typical lab setup. Additional complexity is added by the need to ensure study participants remain unknown to each other. Therefore, the next evaluation will utilise the Wizard of Oz (WoZ) method simulating other application users to gather usability data followed by semi-structured interviews after application usage to gather insights about the social implications. The realised prototype system in combination with the WoZ method enables us to closely simulate a contextual evaluation [8]. Thereby, the wizard will simulate other application users through a web-based interface also monitoring the screen status of the mobile device. After incorporating the outcomes of the WoZ study into a second prototype iteration, a functionality and performance study will be conducted with more simultaneous application users. This study will be conducted in a lab setting to assess the functionality of Capital Music. The final iteration will then be submitted to Apple's App Store for review and real world application usage, generating a user base, and collecting rich data sets of place based music consumption.

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